

REMARKS

Claims 1 through 12 are pending in this application. The specification has been amended to correct manifest grammatical errors, claims 1 through 6 amended and new claims 7 through 12 added. Care has been exercised to avoid the introduction of new matter. Claims 1 and 2 have been amended to clarify that the method relates to fabricating a diffractive optical element (DOE), and comprises the manipulative step of reactive ion etching a pattern in a ZnSe polycrystalline substrate, adequate descriptive support for which should be apparent throughout the originally filed disclosure. The additional amendments merely eliminate multiple dependency. In short: claims 4, 5 and 6 have been amended to depend only from claim 1; claims 7 and 8 represent original claim 4 dependent upon claims 2 and 3, respectively; claims 9 and 10 represent original claim 5 dependent upon claims 2 and 3, respectively; and claims 11 and 12 represent original claim 6 dependent upon claims 2 and 3, respectively. Applicant submits that the present Amendment does not generate any new matter issue.

Claim Objection

The Examiner objected to claims 4, 5 and 6 asserting improper dependency. Claims 4, 5 and 6 have been amended to limit the dependency to a single previous claim, thereby overcome the stated basis for imposed objection. Accordingly, withdrawal of the objection to claims 4, 5 and 6 is solicited.

Misinterpretation of the Claimed Invention

In the second enumerated paragraph on page 2 of the February 13, 2003 Office Action, the Examiner misconstrued the claim limitation "chlorine-based gas which does not include a hydrocarbon group" as confined to " BCl_3 ". This interpretation is clearly legally erroneous and unduly limiting.

Firstly, claim interpretation is a **question of law** and pivots about how one having ordinary skill in the art would have interpreted a claimed invention in light of and consistent with the written description of the specification. *Miles Laboratories, Inc. v. Shandon, Inc.*, 997 F.2d 870, 27 USPQ2d 1123 (Fed. Cir. 1993). With that **legal tenet** in mind, Applicant submits it should be apparent from the written description that BCl_3 is merely an **example**, and **not the only** chlorine-based gas which does not include a hydrocarbon group suitable for use in the present invention. See, for example, the Abstract as well as page 4 of the written description of the specification, lines 11 through 14 where it is stated that " BCl_3 gas is **preferably** used as the chlorine-based gas" (Emphasis supplied). Note also page 5 of the written description of the specification, lines 17 and 18, wherein the expression "chlorine-based gas **such as** BCl_3 or the like" is employed (emphasis supplied).

Based upon the foregoing, one having ordinary skill in the art would have interpreted the claim limitation "chlorine-based gas which does not include a hydrocarbon group" as any chlorine-based gas which does not include a hydrocarbon group--which is just it says, and **not limited to** BCl_3 . *Miles Laboratories, Inc. v. Shandon, Inc.*, *supra*.

Claims 1 and 4 were rejected under 35 U.S.C. §102 for lack of novelty as evidenced by Schetzina.

In the statement of the rejection, the Examiner asserted that Schetzina discloses a method which comprises the step of reactive ion etching a zinc selenide (ZnSe) substrate 15. This rejection is traversed as factually erroneous.

The factual determination of lack of novelty under 35 U.S.C. §102 requires the identical disclosure in a single reference of each element of a claimed invention, such that the identically claimed invention is placed into the recognized possession of one having ordinary skill in the art. *Elan Pharmaceuticals Inc. v. Mayo Foundation*, ___ F.3d ___, 64 USPQ2d 1917 (Fed. Cir. 2002); *Crown Operations International Ltd. v. Solutia Inc.*, 289 F.3d 1367, 62 USPQ2d 1917 (Fed. Cir. 2002). Further, in imposing a rejection under 35 U.S.C. §102, the Examiner is required to specifically identify wherein an applied reference identically discloses each feature of a claimed invention. *In re Rijckaert*, 9 F.3d 1531, 28 USPQ2d 1955 (Fed. Cir. 1993); *Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 221 USPQ 481 (Fed. Cir. 1984). That burden has not been discharged even with respect to the originally presented claims. Moreover, there are significant differences between the claimed method and Schetzina's method that scotch the factual determination that Schetzina discloses a method identically corresponding to that claimed.

The Missing ZnSe Polycrystalline Substrate

Even before the prior Amendment, claim 1 was directed to a method which comprise etching a ZnSe **polycrystalline** substrate. The word "polycrystalline" is conspicuous by its absence from the disclosure of Schetzina. Indeed, the Examiner appears fully aware that the claimed method is directed to etching a ZnSe polycrystalline substrate as apparent from the first enumerated paragraph on page 2 of the February 13, 2003 Office Action. But when it comes to the rejection under 35 U.S.C. §102, the Examiner eschews discharging the judicial burden never mentioning the word "polycrystalline" and never pointing to any specific location in Schetzina which indicates in any way that a ZnSe **polycrystalline** substrate is etched. *In re Rijckaert, supra*; *Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick Co., supra*.

On the other hand, it would appear that the devices disclosed by Schetzina are light emitting devices, such as LEDs or LDs which would involve **single crystalline** material.

At any rate, for clarification, claim 1 have been amended as discussed *infra*.

Schetzina does not disclose a method of fabricating a diffractive optical element (DOE).

The invention defined in independent claim 1 is directed to a method of fabricating a DOE. It is **not** apparent that fabricating a DOE is even a blip on Schetzina's radar screen. DOEs are made from **polycrystalline material, not monocrystalline** or single crystal material as are Schetzina's light emitting devices. This **difference** is not without significant, in that a polycrystalline substrate comprises many single grains

which impacts etching. The present invention is designed to provide an even etched surface of polycrystalline bulk because the etching method in accordance with present invention is independent of the plain orientation of the crystals.

Schetzina does not etch a Pattern

The method defined in independent claim 1 further comprises the manipulative step of etching a **pattern** in a ZnSe polycrystalline substrate. The Examiner referred to column 19 of Schetzina, lines 30 through 34, wherein removal of substrate 15 (Fig. 26C) is disclosed. **Removal is not etching a pattern.**

Conclusion

The above argued functionally significant differences between the claimed method and Schetzina's method undermine the factual determination that Schetzina describes a method identically corresponding to that claimed. *Minnesota Mining & Manufacturing Co. v. Johnson & Johnson Orthopaedics Inc.*, 976 F.2d 1559, 24 USPQ2d 1321 (Fed. Cir. 1992); *Kloster Speedsteel AB v. Crucible Inc.*, 793 F.2d 1565, 230 USPQ 81 (Fed. Cir. 1986). Applicant, therefore, submits that the imposed rejection of claims 1 and 4 under 35 U.S.C. §102 for lack of novelty is evidenced by Schetzina is not factually viable and, hence, solicits withdrawal thereof.

Claim 2 was rejected under 35 U.S.C. §102 for lack of novelty as evidenced by Narui et al.

In the statement of the rejection, the Examiner refer to column 5 of Narui et al., lines 55 and 56, and to column 6 thereof, lines 26 through 28, asserting the disclosure of a method corresponding to that claimed. This rejection is traversed.

As previously argued, the factual determination of lack of novelty under 35 U.S.C. §102 requires the identical disclosure in a single reference of each element of a claimed invention, such that the identically claimed invention is placed into the recognized possession of one having ordinary skill in the art. *Elan Pharmaceuticals Inc. v. Mayo Foundation, supra*; *Crown Operations International Ltd. v. Solutia Inc., supra*. There are fundamental differences between the method defined in independent claim 1 and the methodology of Narui et al. that scotch the factual determination that Narui et al. disclose a method identically corresponding to that claimed.

Specifically even before the prior Amendment, the invention defined in independent claim 2 was directed to a method for etching a **ZnSe polycrystalline** substrate. It is **not** apparent, and the Examiner did **not** discharge the initial burden of specifically pointing out wherein Narui et al. disclose or suggest etching a **polycrystalline** ZnSe substrate. Indced, Narui et al. relate to a light emitting device, such as an LED or LD, which is fabricated with a **monocrystalline** or **single crystalline** ZnSe substrate.

As previously pointed out, the difference between a monocrystalline substrate and a polycrystalline substrate is functionally significant in terms of etching. In accordance

with the present invention, an even etched surface of polycrystalline bulk is provided which is independent of the plane orientation of crystals vis-à-vis conventional practices. This difference alone is sufficient to undermine the factual determination of lack of novelty.

Furthermore, the invention defined in independent claim 2 is directed to a method of fabricating a DOE. Clearly, Narui do not relate to fabricating a DOE, but to a light emitting device.

The above argued functionally significant differences between the claim method and the method disclosed by Narui et al. undermine the factual determination that Narui et al. disclose a method identically corresponding to that claimed within the meaning of 35 U.S.C. §102. *Minnesota Mining & Manufacturing Co. v. Johnson & Johnson Orthopaedics Inc., supra; Kloster Speedsteel AB v. Crucible Inc., supra.* Applicant, therefore, submits that the imposed rejection of claim 2 under 35 U.S.C. §102 for lack of novelty as evidenced by Narui et al. is not factually viable and, hence, solicits withdrawal thereof.

Claim 3 was rejected under 35 U.S.C. §103 for obviousness predicated upon Narui et al. in view of Collins.

Claim 5 was rejected under 35 U.S.C. §103 for obviousness predicated upon Schetzina in view of Harafuji.

Claim 6 was rejected under 35 U.S.C. §103 for obviousness predicated upon Schetzina in view of Kim et al.

Each of the above rejections under 35 U.S.C. §103 is traversed. Specifically, claim 3 depends upon independent claim 2 and claims 5 and 6 depend upon independent claim 1. Applicant incorporates herein the arguments previously advanced in traversing the imposed rejection of claim 1 under 35 U.S.C. §102 for lack of novelty as evidenced by Schetzina and the imposed rejection of claim 2 under 35 U.S.C. §102 for lack of novelty as evidenced by Narui et al. Specifically, Schetzina et al. neither disclose nor suggest a method of fabricating a DOE comprising etching a ZnSe polycrystalline substrate to form a pattern. Narui et al. neither disclose nor suggest a method of fabricating a DOE comprising etching a ZnSe polycrystalline substrate. The additional reference to Collins does not cure the argued deficiencies of Narui et al. and the additional references to Harafuji and Kim et al. do not cure the argued deficiencies of Schetzina et al. Ergo, even if the applied references are combined as proposed by the Examiner, the claimed inventions **would not** result. *Uniroyal, Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 5 USPQ2d 1434 (Fed. Cir. 1988).

Further, there exists a potent indicum of **nonobviousness** which merits consideration. Specifically, it is well settled that the problem addressed and solved by a claimed invention must be given consideration in resolving the ultimate legal conclusion of obviousness under 35 U.S.C. §103. *North American Vaccine, Inc. v. American Cyanamid Co.*, 7 F.3d 1571, 28 USPQ2d 1333 (Fed. Cir. 1993); *Northern Telecom, Inc. v. Datapoint Corp.*, 908 F.2d 931, 15 USPQ2d 1321 (Fed. Cir. 1990); *In re Newell*, 891 F.2d 899, 13 USPQ2d 1248 (Fed. Cir. 1989); *In re Nomiya*, 509 F.2d 566, 184 USPQ 607 (CCPA 1975). In this respect, Applicant would note that the present invention addresses and solves an **etching problem involved in fabricating a DOE using**

conventional hydrocarbon-based gasses. Applicant **discovered** that the etching rate depends heavily on the crystal structure of the polycrystalline grains because of the generation of by-products. See page 3 of the written description of the specification, lines 15 through 21. Since the etching speed of polycrystalline grains is normally different depending on the polycrystalline plane orientation, the etched surface becomes uneven or coarse. Because of the distance between the etched surface and the unetched plane it is impossible to achieve the desired distance for diffraction within permissible deviation in order to fabricate an effective DOE.

Applicant addresses and solves that problem by etching the ZnSe polycrystalline substrate employing a chlorine-based gas which does not include a hydrocarbon group. That problem is beyond the scope of the applied primary references who do **not** relate to a DOE. Under such circumstances the problem addressed and solved by the claimed invention merits consideration as a potent indicium of **nonobviousness**.

Conclusion

It should, therefore, be apparent that a prima facie basis to deny patentability to any of the claims 3, 5 and 6 under 35 U.S.C. §103 has not been established. Moreover, upon giving due consideration to the problem addressed and solved by the claimed invention, which is not even on the radar screens of the applied primary references, the conclusion appears inescapable that one having ordinary skill in the art would **not** have found the claimed inventions **as a whole** obviousness within the meaning of 35 U.S.C. §103. *Jones v. Hardy*, 727 F.2d 1524, 220 USPQ 1021 (Fed. Cir. 1984).

Applicant, therefore, submits that the imposed rejection of claim 3 under 35 U.S.C. §103 for obviousness predicated upon Narui et al. in view of Collins, the imposed rejection of claim 5 under 35 U.S.C. §103 for obviousness predicated upon Schetzina in view of Harafuji, and the imposed rejection of claim 6 under 35 U.S.C. §103 for obviousness predicated upon Schetzina in view of Kim et al. are not factually or legally viable and, hence, solicit withdrawal thereof.

New Claims 7 through 12

New claims 7 through 12 are free of the applied prior art by virtue of their ultimate dependence upon independent claim 2, the patentability of which has been argued *supra*.

It should, therefore, be apparent that the imposed rejections have been overcome and that all pending claims are in condition for immediate allowance. Favorable consideration is, therefore, solicited.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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